MEASURING THE UNINSURED:
VARIATIONS IN ESTIMATION METHODS

Although both national and state-level surveys provide a wealth of valuable data for health care coverage policy analysis and development, the Office of Health Care Access (OHCA) has found that Connecticut-specific surveys yield the most useful information. They take into account the unique characteristics of our state's uninsured population and provide an opportunity to study the magnitude and characteristics of the uninsured so that the state can plan, target and implement coverage expansions effectively. Specifically, Connecticut surveys allow the state to customize questions to collect information on Connecticut-specific insurance coverage and costs, as well as health care access issues and intermittent or continuous spells of uninsurance. They also provide the opportunity to study subpopulations — critical in states like Connecticut where lack of coverage is more isolated among small groups. In addition, data are quickly available for analysis, allowing OHCA to provide timely information to policy makers as the state moves forward in expanding access to affordable health insurance coverage to all its citizens. This issue brief discusses several estimation methods currently used to inform health policy debates on health care coverage issues, the methods' advantages and limitations, and a comparison of their estimates.

> *. . .Connecticut-specific surveys yield the most useful information . . . data are quickly available for analysis, allowing OHCA to provide timely information to policy makers . . .*

National and State Surveys Used to Develop Health Policy

Table 1 (page 2) provides an overview of various coverage estimation sources, their definitions, reference periods, frequency and key points regarding their advantages and limitations.

The Current Population Survey (CPS)[1] is the most commonly used source of data for estimating health insurance coverage. Data generated by the CPS are used in the State Children's Health Insurance Program (SCHIP) funding formula and have a direct impact on the amount of federal funds states receive. A 2002 sample size increase has allowed Connecticut to calculate more accurate state-level estimates of uninsurance than in previous years. However, the increased sample size is not large enough to conduct sub-state analysis necessary for certain detailed policy development.

The Behavioral Risk Factor Surveillance Survey (BRFSS)[2] is conducted by the states themselves, and a common sampling methodology and list of core questions allows cross-state comparisons. States have control over questions included in state-specific modules, and have access to person-level data for ongoing analysis. Connecticut has used BRFSS data to create policies and initiatives to meet public health-related goals and measure their success. However, the BRFSS' exclusion of children and their coverage status are its chief drawbacks, from a health insurance coverage policy perspective. Participation can also be expensive.

The "proxy" method of estimation relies, in part, on patient information from hospital administrative discharge data — whereby "self-pay" or "no charge" hospital discharges for diagnoses that always result in hospitalization

Table 1: Overview of Various Estimation Sources

PURPOSE	DEFINITION OF UNINSURED	REFERENCE PERIOD	FREQUENCY	KEY ADVANTAGES	KEY LIMITATIONS
Current Population Survey (CPS) -- Federally-sponsored national survey					
Primarily, to measure labor force participation and unemployment	• Respondents classified as uninsured if they do not answer "yes" when asked if they have any of a list of insurance types; respondents not asked directly if they are uninsured	Previous calendar year (beginning 15 months prior to survey conducted in March)	Annually, each March	• Federally funded • Generally high response rate • Ability to compare results with other states • Survey covers all ages • Provides estimates on residents who had or did not have continuous coverage in a calendar year • Uses a mix of telephone and in-person interviews therefore has broader coverage • Provides economic data such as income	• States lack control over questions asked • Small state sample sizes may lead to larger margins of error for state subpopulations or specific population groups • Possible overestimation of full-year uninsured persons • Possible underestimation of Medicaid recipients • Two-year lag in available data • Questionable comparability across years
Behavioral Risk Factor Surveillance Survey (BRFSS) -- Federally-sponsored national survey					
To monitor state-level preventative health practices and prevalence of major risky behaviors among adults	Respondents classified as uninsured if they said they did not have any coverage, health insurance, prepaid plans such as HMOs, or government plan such as Medicare, at the time of the survey (point in time); prior to 2001, intermittently uninsured were also measured	• Coverage status at the time of interview • Before 2002, respondents were also asked if they had coverage in the twelve months preceding interview	Monthly, at end of calendar year results rolled-up	• Short reference period reduces bias • Health Insurance Coverage part of a standard set of questions • States have option of including a health insurance module • Enables continuous assessments of residents' health care access, utilization and preventative practices • Ability to compare results with other states • Provides economic data on respondents such as income • Children's module added in January 2004	• Public health focus on working-age adults and limited focus on children and health insurance coverage • Samples telephone #s using RDD but people without phones are more likely to be uninsured • Questions and optional modules can be added on at a cost to states • The same data may not be collected across years, depending upon choice and frequency of optional modules • No retrospective children's data available • One-year lag in available data
Proxy method – OHCA inpatient hospital discharge data – Other state-level estimation method					
To estimate uninsured residents using administrative hospital records	"Self-pay" or "no charge" or "other" administrative data records for conditions requiring hospitalization regardless of insurance coverage	Hospital fiscal year	Annually, if desired	• Low cost – data used is already collected by state and federal governments • Allows demographic drill down • Quarterly hospital data allows flexibility • Covers all ages	• Higher potential for bias, e.g., does not take into account discharges that receive public coverage retroactively • Analysis limited to certain discharge data elements • Estimating methodology also dependent upon certain CPS data – two-year lag
OHCA Household Survey -- State-level survey					
To estimate health insurance coverage and utilization of health care services	People who stated they did not have coverage at the time of the survey (point in time – P-I-T); people who stated they had intermittent coverage during the year preceding the survey (intermittent -- Int); and people who said they had no coverage during the entire year preceding the survey (continuously -- Cont)	Estimates various periods of coverage and non-coverage: at time of survey, entire 12 months preceding survey, any part of 12 months preceding survey	As funding permits	• Data available for analysis within three months of survey completion • Questions can be customized to collect comprehensive information on state-specific health services access and utilization, health insurance costs and features, sub-population characteristics, • Can help define (more specifically than national surveys) which populations are uninsured within the state to facilitate the design and evaluation of state-specific programs • Allows greater opportunity to verify insurance status of respondents	• Currently grant-funded -- no regular funding mechanism • No in-person interviews may create some bias

are used to estimate the uninsured. Administrative data is current and readily available at relatively low cost. However, there is a two-year lag in necessary state-level CPS demographic data (e.g., age, race, and ethnicity) that is also required for the estimates, so the proxy estimation method is subject to the same time lags as CPS estimates. In addition, the proxy itself tends to be biased, e.g., administrative hospital data does not account for patients that ultimately use alternate sources of payment for the hospitalization, such as obtaining public coverage after discharge.

State-level surveys, such as OHCA's 2001 Household Survey and the agency's 2004 Household Survey currently in the field, offer the greatest opportunity to customize questions and sample design in order to obtain information most relevant to state-specific policy formation. Because such surveys are tailored to state needs, a wealth of information can be gathered on insurance coverage history, access to employer-based coverage, access to and utilization of services and respondent demographics. In addition, turn around time for usable data is faster than other means (generally, three months after survey completion), allowing for timely information dissemination to key policy makers and stakeholders. To date, Connecticut has been dependent upon federal grant funds to field its household survey; these funds are likely to be less available in the future.

Differences Among Estimates

Figure 1 (below) illustrates variations in national and state surveys and estimation methods.[4] An analysis of estimates from the four sources shows that, with the exception of BRFSS Int 01 results, federally-sponsored national surveys had higher point estimates than Connecticut's state-level estimates. These differences in estimates may be due to more extensive verification of insurance status in state surveys and the differences in reference periods and definitions used by the various sources. According to CPS estimates, Connecticut's uninsured rate grew from 9.0 in 1999 to 10.5 in 2002. It should be noted that the changes in CPS estimates observed are of much less magnitude than in years prior to 1999, when year-to-year estimates were much more volatile. This decrease in volatility of estimates may be attributed to improvements in the CPS, such as nearly tripling Connecticut's sample size, which resulted in better representation of the state's minority populations, who are most likely to be uninsured. BRFSS' point estimates fluctuated over the four-year period, with point in time estimates ranging from a low of 5.7 percent in 2001 to a high of 10.9 percent in 2002. BRFSS' estimates of intermittently insured residents dropped from a
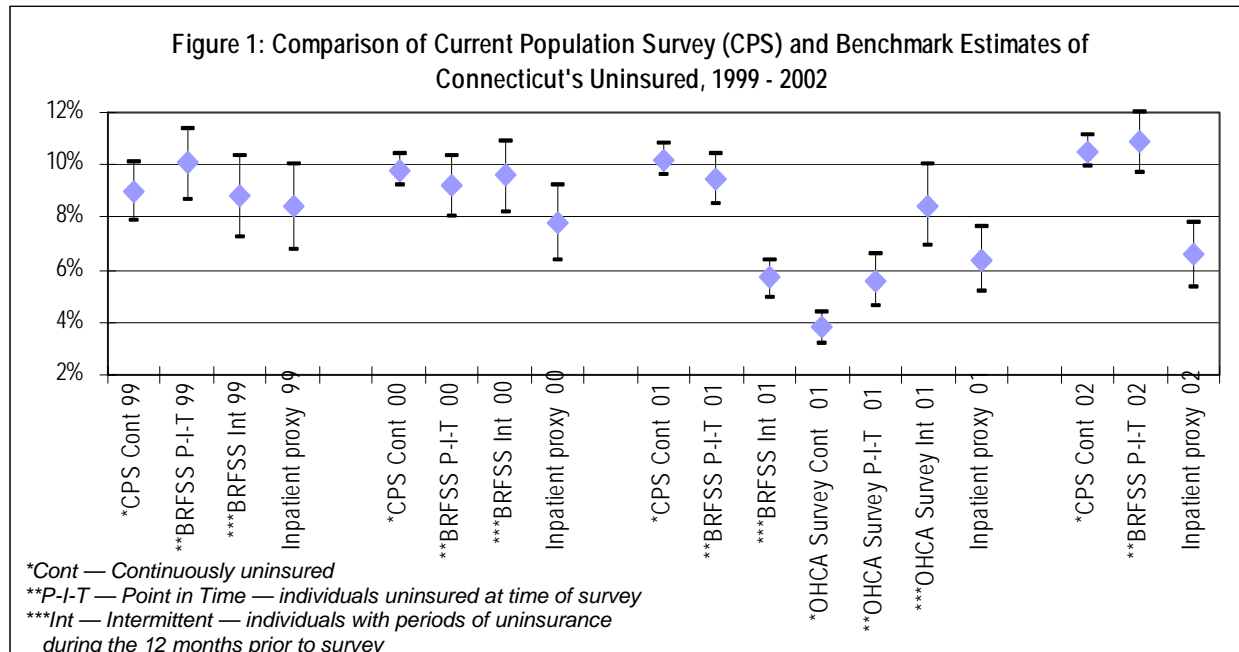

Figure 1: Comparison of Current Population Survey (CPS) and Benchmark Estimates of Connecticut's Uninsured, 1999 - 2002

*Cont — Continuously uninsured
**P-I-T — Point in Time — individuals uninsured at time of survey
***Int — Intermittent — individuals with periods of uninsurance
      during the 12 months prior to survey

Table 2: Estimates of Connecticut's Uninsured, 2001 - 2002

CT's Population*	Method	Rate (%)***	Estimate	95% Confidence Interval**	
				Minimum	Maximum
2001					
3,425,074	CPS Cont	10.2	346,000	324,000	368,000
	BRFSS P-I-T	9.5	325,382	281,131	356,208
	BRFSS Int	5.7	195,229	171,253	219,204
	OHCA Survey Cont	3.8	124,900	105,300	144,500
	OHCA Survey P-I-T	5.6	185,200	151,900	218,500
	OHCA Survey Int	8.4	278,500	228,200	328,500
	Inpatient proxy	6.4	219,000	176,872	261,128
2002					
3,350,345	CPS Cont	10.5	351,786	331,684	371,888
	BRFSS P-I-T	10.9	365,188	324,983	402,041
	Inpatient Proxy	6.6	220,570	178,690	262,450

*Source: Current Population Survey

**Except CPS, which is 90% confidence interval.

***Sources adjusted estimates to reflect the population's demographic characteristics.

high of 9.6 percent in 2000 to 5.7 percent in 2001. (BRFSS ceased collecting information on the intermittently uninsured after 2001). In contrast, the proxy method produced relatively stable point estimates of the uninsured, from a high of 8.4 percent in 1999 to a low of 6.4 percent in 2001, with a slight increase to 6.6 percent in 2002. OHCA's Household Survey estimated the percentage uninsured at the time of the survey at 5.6 percent while an additional 2.8 percent of respondents were insured at the time of the survey but lacked coverage at some point in the prior year. OHCA's lower estimates may result from the Household Survey's inclusion of questions that verify who pays for doctor or hospital visits and allows respondents to name their specific health care coverage.

In general, there were no statistically significant differences in estimates among the four sources in 1999 or 2000. However, statistically significant differences did occur in later years (coinciding with changes in national survey question changes.) **Table 2** (above) shows the actual percentages, estimates and confidence intervals for the more recent years where statistically significant differences occurred.

Conclusion

Estimates of the uninsured can differ significantly across surveys, depending upon differences in survey design features and methodologies, variable definitions and time periods. Whatever the method used to estimate insurance coverage, there are advantages to and limitations of the various data sources. National surveys are often used by states, when state-specific surveys are not feasible, to obtain information on health insurance coverage for individuals and their families and to understand trends in health insurance coverage rates. Connecticut, along with several other states, sometimes uses hospital discharge data in a "proxy measure" approach. Many states, including Connecticut, also design and conduct their own surveys to assist policy makers with state-specific policy development and allow for sub-population estimates. OHCA finds state-specific surveys provide the most useful policy-relevant information.

[1]CPS, an annual demographic survey, is a joint project between the US Bureaus of the Census and of Labor Statistics. Unless otherwise stated all CPS estimates are from the Census Bureau Historical Health Insurance Tables. http://www.census.gov/hhes/hlthins/historic/

[2]The BRFSS is a statewide telephone survey coordinated by the Centers for Disease Control and Prevention (CDC) and conducted in all 50 states. Interviews of randomly-selected, non-institutionalized adults ages 18 and older are conducted on a monthly basis and combined by calendar year and adjusted to be representative of Connecticut's adult populations.

[3]Only newborns, appendectomies and heart attack discharges were included in estimating the uninsured since those conditions required hospitalization regardless of insurance coverage status. The uninsured were discharges that had the primary payer status "self-pay," "no charge" and "other." Derived rates reflect age, gender, race and ethnic composition of the state's population.

[4]In Figure 1, the point estimates are in bold, and the upper and lower limits of the estimates are depicted as horizontal bars. Interval estimates give a more accurate measure since they provide a range within which the true point lies.